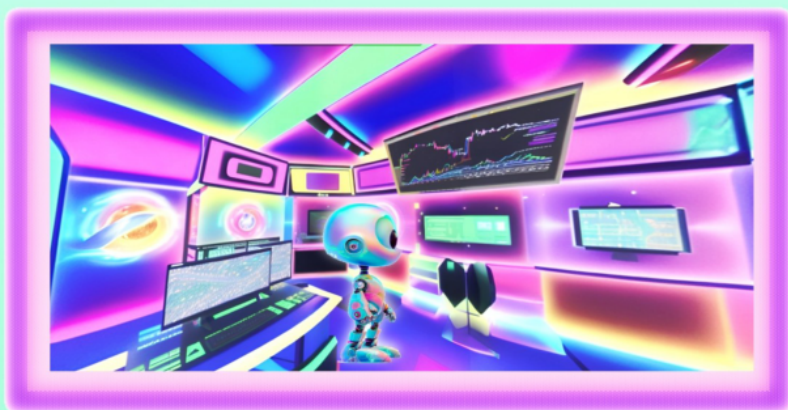


Top 11 Uses of Artificial Intelligence for Investors

*Brainy Bots
for
Boosting Returns and Shrinking Risks*

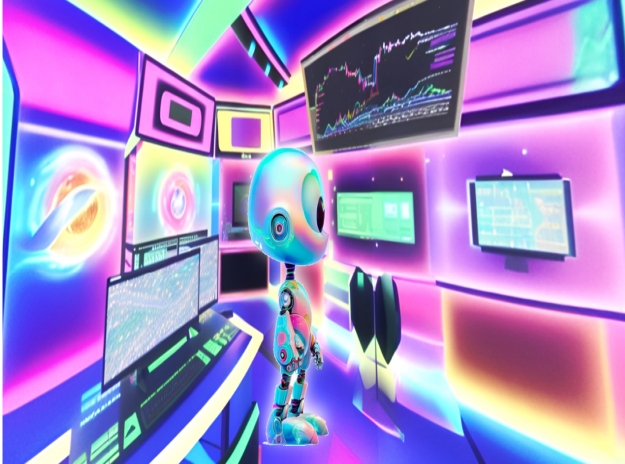


Steven Kim

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Overview

The top uses of artificial intelligence for investors run the gamut from trend spotting and market forecasting to asset selection and risk management. For instance, neural networks based on generative models can glean fresh insights from abstruse data as well as craft novel strategies to boost returns while shrinking risks.

This report caters to beginners and experts in investing as well as observers in the wings who want to grasp the wealth of applications for smart agents. As a backdrop, a growing fraction of humanity pursues its financial security by tending

assets ranging from stocks and bonds to currencies and realties. Hence, the survey here should interest current investors as well as future entrants in the field.

Introduction

Artificial intelligence (AI) is a universal tool for investors. The technology can be used in myriad ways, from screening assets and forecasting markets to planning investments and managing risks. To keep things simple, we will focus on the applications in the stock market. Even so, the basic concepts and techniques apply to other asset classes ranging from bonds and options to currencies and realties.

The first wave of applications for AI in the financial realm emerged during the 1980s. The early efforts dealt mostly with neural networks for market forecasting and stock selection. Unfortunately, the hardware platforms and software techniques of the era were too flimsy to make much of an impact. More precisely, the neural models were too callow and the hardware too sluggish to build lissome systems that could handle the complexity of the real and financial markets.

On the upside, though, neural models enjoyed a flurry of breakthroughs at the dawn of the millennium. Advances in hardware and software brought forth brainy programs that often surpassed human experts in their own domains. The applications ran the gamut from science and business to artwork and medicine.

On the software front, a watershed lay in the *Generative Pre-Trained Transformer* (GPT): a neural template meant to process natural language. One outgrowth was *ChatGPT*, a conversational agent released in 2022. The chatty program promptly created a mass market for AI software. The groundbreaker was soon followed by improved models such as *GPT-4*.

A digital agent of this breed can muster information in varied states of structure or disorder. On the spectrum of rigor, the high end houses rigid layouts such as a column of numbers or a table of data. Meanwhile the opposite end features flexible items such as a line of poetry or a passage of prose.

From a different slant, a nimble program can handle multiple modes of input and output ranging from text and image to voice and video. By rounding up information in discrepant formats, a smart agent can combine disjointed facts, distill useful insights, and prepare cogent reports.

From a larger stance, a smartbot can hike the efficiency of human principals by performing most of the mundane work. Moreover, the helper may hoist the effectiveness of decision making by spotting obscure signals, gleaning wispy clues, and crafting novel strategies for investment.

In the sections to come, we will explore the top 11 ways that cyber agents can empower all manner of investors. Each type of application will be profiled by a succinct description followed by a trio of examples.

1. Market Survey

A smart chatbot can help the investor by keeping tabs on the real and financial markets as well as hunting for fresh opportunities. For this purpose, the digital aide may survey the field, detect subtle patterns, and unearth hidden gems. At a primal level, the smartbot saves time and effort for the human principal. Moreover the agent can prepare plans and provide cues to bolster profits while shrinking risks.

Case 1. A virtual aide may produce timely reports on vital events and emerging trends in the stock market, along with general guidelines and pointed suggestions for investment. The assistant could tailor the breadth of topics, depth of detail, and

schedule of reports to match the user's tastes. For instance, an active investor might favor a weekly review dealing with recent events and short-term outlooks for the stock market. On the other hand, a sedate player may prefer a monthly or quarterly checkup that covers a medley of asset classes in tandem with their prospects over the next few years.

Case 2. The chatbot can conduct an in-depth review of a particular stock or sector, including the drawcards and drawbacks entailed. The agent may also evaluate a batch of stocks or sectors using a variety of yardsticks and criteria. For instance, the chatbot might compare Amazon against Walmart across a handful of dimensions such as revenue growth, market share, customer satisfaction, innovative potential, and social impact.

Case 3. The smartbot can build a dashboard to present knotty data in graphic forms in concert with interactive features. The items on display could run the gamut from charts and events to signals and forecasts. The investor may ask questions, revise models, and explore scenarios for the future. For instance, the user might inquire how investing in a high-tech firm such as Tesla or Nvidia, or both, would affect the likely performance and risk exposure of the current portfolio.

2. Trend Analysis

A cyber aide can crunch historical data to fathom long-run trends as well as short-term waves. The fitting subjects run the gamut from single firms to entire countries in the real economy; and from solo stocks to broad benchmarks in the financial forum. A firm grasp of the action in the marketplace leads to a sound strategy for investment.

Case 1. The smartbot could review the

performance of jaunty stocks in the technology sector over the past year. After culling the winners and losers, the agent may infer the reasons for the divergent outcomes. For instance, the chatbot might explain how Apple outpaced Microsoft in the stock market despite a downturn in earnings in the real economy; or why Tesla surged on the bourse in spite of delays in ramping up production at its new-build factories. The legwork sets the stage for plotting the trendlines downrange.

Case 2. The virtual agent can gauge the correlation between oil prices and energy stocks in order to predict how the markets will respond to the toppling of dirty fuels by clean forms based on the wind and sun. The agent may also simulate motley scenarios and interpret the results. For instance, the chatbot might foreshow how a war in the Middle East or a breakthrough in fusion power would affect the energy market. The docket is similar for the risk exposure and likely return for the investor's portfolio.

Case 3. The chatbot may examine the effects of macroeconomic factors such as the inflation rate, interest level, and economic output on the stock market. The survey paves the way for mapping the driving forces in tandem with their impacts on singular stocks as well as market benchmarks. For instance, the chatbot could anticipate how an upswing in inflation or a slowdown of growth will affect sundry sectors ranging from healthcare and technology to materials and utilities.

3. Asset Appraisal

A smart chatbot can evaluate stocks by fetching information from diverse sources, merging the morsels, and weighing the results. For this purpose, the inputs run the gamut from news articles and corporate reports to business plans and customer reviews. The agent may digest the contents to identify promising stocks and discover veiled opportunities. Some examples of stock

valuation are as follows.

Case 1. The smartbot can size up a maverick firm such as Tesla by way of internal factors including technical innovation, manufacturing skill, and logistic efficiency. The setup is similar for external facets such as customer loyalty, regulatory climate, and societal impact. The jazz of drivers will affect the administrative overhead and net profit as well as the cash flow and debt load going forward. The workout helps the agent to fix a price target for the stock along with the matchup of risk and reward for the investor.

Case 2. The smartbot could compare a group of stalwarts such as Alphabet, Amazon and Microsoft in terms of financial health as well as business clout. An example of the former concerns the pool of current assets or cash flows, while an instance of the latter involves the stack of technical skills or customer raves. The assay should enable the bot to estimate a fair value for each firm followed by a recommendation to buy or sell any shares of stock.

Case 3. The same approach also applies to private concerns. For instance, consider a software builder named OpenAI. The smartbot could scour the information borne by published papers, live demos, and social media to assess the firm's strengths in tandem with its influence on the economy and society. The bot may also review the fielded products plus research projects as a basis for predicting the company's revenues and expenses as well as valuation and funding over the next few years. From these tallies, the smartbot may guesstimate a price range paired with a confidence level for the present value of the enterprise.

4. Sentiment Review

An adroit bot can sense the mood of the market by sampling the chatter in cyberspace. The assay

makes use of *sentiment analysis*: a set of techniques to plumb the tone and intensity of emotions evinced by text and speech in motley forms such as mass media and social platforms.

The actors in the stock market, be they amateurs or professionals, love to flock together on the wrong side of the market. For this reason, a sentiment reading works as a *contrarian* indicator. To wit, the market does the opposite of what the majority expects. When most investors are bullish, the smart players turn bearish; when the majority is bearish, it's time to be bullish.

Case 1. The smartbot can survey the comments of pundits and influencers on forums like Twitter and Reddit to see how they react to ongoing trends and wayward events. The agent may peg the degree of optimism or pessimism among the opinion leaders, then match the latest readings against the historical averages. For instance, the chatbot might note that the talking heads in the financial media are more bubbly than usual; or their outlook on the stock market is 47% more somber than the norm.

Case 2. The agent may canvass the reviews and ratings of singular stocks or communal pools on platforms like Stocktwits and Seeking Alpha in order to fathom the voguish views and half-baked arguments. The chatbot could also identify the most popular stocks and funds at such portals, and check how the rankings have jibed in the past with subsequent moves of the same widgets. For instance, the bot may discern that Netflix is the most popular stock on Stocktwits at this juncture and thus likely to crumple within the next couple of weeks.

Case 3. A rare exception to the rule of contrary bent applies to corporate insiders such as chief executive officers and top financial managers. These bigwigs are intimately familiar with the internal status of their firms as well as the external conditions in the real economy. To set the

background, a share of stock reflects a stake in the current assets and future earnings of a business. For this reason, the intake of profits determines the lot of the firm going forward. More generally, the health of the business in the real economy is the mainspring behind the stock price in the financial tract over the long haul. When the leaders buy gobs of shares in their own company, it's a good sign for the chosen stock; when they sell much more than usual, it's a bad omen. For a survey of insiders in the aggregate, the same type of signal also prevails with witching frequency to shorter spans of a few days for the bourse as a whole; for instance, a gush of sales by the top brass in their respective firms may well precede a short-term slump of the entire bourse in a matter of days.

5. Scenario Scanning

A methodic way to divine the future is to explore a raft of potential outcomes. In this context, the motive forces include prolonged trends such as technical progress and economic growth, as well as passing shocks such as banking crises and market crashes. The resulting fan-out of timelines reveals how a given portfolio may perform under assorted conditions.

Case 1. *Economy.* A chatbot can gather historical data from far-flung countries then discern how the inflation rate affects the housing market in general. As a baseline, the agent may review a bunch of scenarios whereby the cost of living rises or falls by varied amounts and durations. The levels of demand and supply in the property sector show up in sundry ways such as transaction volumes, purchase prices, and rental rates. For instance, the bot may simulate a market where a spurt of inflation dunks the purchasing power of consumers, thus sinking the real economy in toto and the housing market in detail.

Case 2. *Bourse.* The smartbot could analyze the

impact of a global financial crisis on the stock market by using archived records such as news reports and financial stats. For instance, the bot may run a simulation where an oversized bank blows up and triggers a chain reaction of defaults that clobbers the banking industry as well as the stock market at large. The plot is similar for the smackdown of a single stock or an entire sector.

Case 3. *Technology*. The cyberbot could review a host of scientific papers, commercial patents, and market forecasts to augur how quantum computing will transform the cybersecurity market. The nascent technology will displace traditional methods of encryption and upbear quantum-proof techniques. One offshoot is to open new doors for cybersecurity firms. On the dark side, the smartbot may explore how quantum computing will enable hackers to crack passwords and decode messages in a flash. On the bright side, the same technology will allow the defenders to spot anomalies and block break-ins in a jiff.

6. Market Forecasting

A smartbot can peer into the future and scope out a melange of timelines. The survey should reveal the most likely paths for the real and financial markets. The topics in sight include economic growth and business climate along with their effects on market benchmarks and singular stocks.

Case 1. The virtual aide can simulate a global pandemic or a geopolitical crisis to preview how the shocker may affect the stock market as a whole. The agent could also intuit how various sectors and industries will perform under stressful conditions.

Case 2. The smartbot can generate a medley of profit levels for a given firm and augur how its stock will react to good news or bad spots. The helper may then review the vignettes to reveal

common patterns such as salient opportunities and gaping sinkholes.

Case 3. The agent could create hypothetical scenarios of mergers and acquisitions among motley firms, then presage the resulting synergy in the real economy in tandem with the odds-on payoff for the stocks in the financial patch. For instance, the smartbot may drum up alternative methods for financing the deals along with the feasibility and profitability of the transactions.

7. Opportunity Alert

A smartbot can monitor the markets and alert the investor to lurking dangers as well as brewing opportunities. The faithful vigil allows the investor to save time and toil as well as avoid information overload, sidestep booby traps, and earn higher returns.

Case 1. A high-growth firm may flop more than its peers when the stock market at large breaks down. The pratfall could be a golden opportunity for the lithe investor to snag the floored stock at a bargain price and reap a plump profit when the bourse at length springs back.

Case 2. A passel of aging carmakers reports a big drop in sales and earnings over the past year. Most investors and gurus brush off the grim news and instead bet on a swift recovery. But the madding crowd fails to grok the macrolevel forces – ranging from technical progress and green transportation to consumer choice and public policy – that condemn the fogeys to extinction.

Case 3. A pioneering venture unveils a product roadmap that points to huge profits half a decade down the line. Yet, most investors and analysts brush aside the lush prospects due to their usual fixation on timespans ranging from a few months to a single year. Here is a dandy opportunity for the keen player to invest early and reap a windfall in due course.

8. Risk Management

In talking about the perils of investing, the financial community dwells almost entirely on the **volatility** of assets; namely, the transient *flutter* of prices. This form of tunnel vision afflicts the mass of practitioners as well as researchers.

In reality, though, a graver danger by far lies in the permanent *wipeout* of capital. When a company goes bankrupt, all its securities go splat: from shares and options to bonds and warrants. Fortunately, a deft agent can help the investor in glomming the hidden and major threat of a complete rubout on top of the obvious and minor nuisance of a ceaseless chain of price swings.

Another trusty maxim for the sage player lies in the **diversification** of assets. In that case, no single bombshell is apt to destroy the entire portfolio.

Case 1. A smartbot can spotlight trends and reveal patterns in disparate markets, from tech and gaming to healthcare and education. The agent may unveil the causal factors in tandem with looming hazards and pending impacts. For instance, it could survey the inroads made by artificial intelligence in the field of augmented reality then winnow the straggling firms most likely to perish.

Case 2. The virtual aide can analyze online resources ranging from articles to videos. For instance, it could peruse a chart of stock prices then offer plausible explanations of the driving forces, along with future prospects including the risks and rewards in store. The bot could also create a visualization to explain a tricky concept or complex event, such as the way a newborn technology will upend an old market and uprear a new industry.

Case 3. The smartbot may assemble a wholesome bundle of stocks based on the goals,

interests and risk tolerance of the investor. The bot could then tweak the portfolio over time to reflect changes in personal tastes as well as shifts in external conditions. Examples of the latter range from bubbling technologies and blazing ventures to economic shakeups and societal upthrows.

9. Performance Audit

A smartbot can assess the risk and gain for a private portfolio then compare the findings against the benchmarks of the market. Among the latter, the yardstick of choice for professionals – be they practitioners such as fund managers or researchers as in academic eggheads – lies in the S&P Index of 500 giants in the stock market. Here are some ways the agent may support the crucial task of performance evaluation on a regular basis.

Case 1. The digital aide could sift through historical data and flesh out a rounded report that covers key metrics for the entire bourse, as in the likes of the average return, mean volatility, and maximum drawdown. The agent may then pit the investor's performance against the touchstones to determine the merits and shortfalls of the current strategy.

Case 2. The smartbot can converse in natural language to learn the investor's hopes, interests, and risk limits then offer tailored tips to optimize the mix of assets. It may also explain the rationale behind each suggestion and preview the kickers for the safety of capital and return on investment.

Case 3. The assistant can compare the performance of motley types of asset classes in the past. It may also explain the linkups among distinct markets, such as the relationships between stocks and bonds along with their tie-ups with futures and options contracts. For starters, the agent could construct vivid charts to present mounds of murky data in lucid forms. From a

different slant, the user may explore a raft of scenarios and conduct what-if studies in an intuitive way. Furthermore, the agent could prepare a written digest or audio recap of each vignette to serve as a springboard for further scrutiny.

10. Safeguard

A smartbot can survey the market to espy hidden dangers. A kindred function is to warn the investor against hasty decisions and impulsive moves. As a backdrop, both newbies and oldsters suffer from mental blocks and manic whims to their own detriment. For instance, the twin demons of greed and fear bedevil all manner of investors ranging from part-time dabblers to full-time junkies in the arena.

Case 1. The mass of investors, including experts, tot up the returns on investment in a witless fashion and jump to the wrong conclusions. For instance, a hothead might add up a couple of annual returns in a simplistic way then declare that a given fund rose by 10% over the span of two years. Yet, the correct method may show that the vessel in fact fell by 20% from start to finish.

Case 2. According to a rampant myth, the ratio of *price to earnings* (PE) is the go-to yardstick for vetting a stock for investment. However, the PE ratio is a faulty guide that dwells on the past. Instead, the proper tool lies in the *PEG* gauge which looks to the future.

Case 3. By received wisdom and popular folklore, the swarm of hedge funds racks up stupendous profits for its clientele. Upon closer inspection, though, the myth of riches strays far from the truth. For instance, even the top tier of hedge funds as a group loses money as time goes by. Put another way, the high flyers underperform a stash of cash stuffed under a mattress. Worse yet, the chronic losses of the hotshots apply to the

gross returns, before taking into account the cutout of billions of dollars per year nabbed by the operators under the guise of “management fees” as well as “profit sharing” during the fleeting spells when the winds of fortune happen to blow in their favor. Sad to say, but the hype of flatulent returns stems from piles of sham statistics such as the bloat due to survivorship bias.

11. Evergreen Learning

The driving forces in the marketplace span the rainbow from technical breakouts and logistic brainwaves to geopolitical flaps and lifestyle changes. The jumble of drivers shapes the structure and function of the economy as a whole as well as the environment and nurture of singular actors. An example of a macrolevel factor involves the uprise of a brand-new industry, or the revamp of global networks of production and distribution. Meanwhile an instance of a microlevel facet concerns the mindset of consumers and producers, or the gumption of inventors and investors.

In this roily setting, the slew of assets and markets faces a constant churn of evolution and renewal. The agents of change range from sapling ventures in the real economy to fledgling platforms in the financial bazaar. In spite of – and due to – the endless turmoil, the keen investor has to juggle a host of factors along with their impacts downstream.

Case 1. A smartbot can profile trends and waves in the tangible economy in order to model the evolving web of causes and effects. For instance, the bot could explain how infotech, biotech and nanotech will transform the economy and society, then devise a strapping strategy to harness the upheavals to come.

Case 2. The agent may survey the advances in technology by scanning reams of resources

ranging from articles and interviews to photos and videos. For instance, the chatbot could fix up a storyboard to depict the likely changes in real and financial markets as a novel technology comes to fruition. The object is to weave the factoids into a coherent tale of past milestones and current outcrops as well as future prospects.

Case 3. The assistant can buttress a program of lifelong learning by offering worldly advice drawn from wide-ranging sources on the Net as well as custom feedback based on the talents and foibles of the investor. For instance, the bot could compile a list of articles, videos and courses tuned to the user in order to expand their horizons and upgrade their skills. The virtual aide may also craft scenarios and run simulations to explore a variety of paths to the future. The resulting trove of insights and pointers will bolster the investor in forging a staunch strategy for sprightly growth in a chaotic environment.

Conclusion

Artificial intelligence is a versatile tool for investors of all stripes ranging from part-time tyros to full-time pros. In this report, we surveyed the top 11 ways that AI can empower human principals. The basic functions span the spectrum from market analysis, trend spotting, and asset valuation to sentiment survey, scenario scanning, and risk management. We focused mainly on the applications of AI for investing in the stock market; but the same concepts and methods apply to other asset classes such as bonds and options, currencies and realties.

A clever bot can scan the panoply of markets to spot patterns, divine trends, and glean insights. For this purpose, the agent may muster information in motley formats ranging from text and image to audio and video. The helper can digest the inputs and prepare concise reports for busy folks on a timely basis in order to boost their

returns on investment while pruning the risks in store.

As an example, the smartbot may divine the causal factors behind the structure and function of the real and financial markets. A kindred task is to predict the driving forces along with their impacts downrange. Moreover the bot may devise then revise spry strategies to pursue the opportunities on the horizon while dodging the dangers along the way.

To sum up, digital agents play a growing role as friendly guides and tireless aides for shrewd investors who want to expand their knowledge and enhance their performance in a complex and dynamic environment. In the age of smart software, the apt question is not whether we need AI at all, but rather how best to use AI to earn higher gains at lower risk.

Sources

Items below are listed in the order of precedence in the narrative.

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